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Cytology of the ascocarp.—According to FRASER,[36] *Humaria rutilans* (*Peziza rutilans*) shows some interesting features in the origin and development of the ascus. The ascocarp originates as a tangle of hyphae without any differentiated sex organs, but nuclei fuse in pairs and the cells containing the fusion nuclei form ascogenous hyphae. Nuclear divisions in the hyphae show sixteen chromosomes, as do also the first and second divisions in the ascus. These two divisions have the characters of the heterotype and homotype mitoses. The third division in the ascus has eight chromosomes. During the first mitosis in the ascus the two nuclei of the ascus fuse. The spores are delimited by radiations passing from the centrosome, but near the base of the spore vacuoles may take part in the process.—CHARLES J. CHAMBERLAIN.

Fossil cycadophytes.—WIELAND[37] has published a short preliminary account of his examination of some of the most famous specimens of the Mesozoic cycadophytes preserved in European collections. The specimens described are those of *Cycadeoidea etrusca*, *C. Reichenbachiana*, *Williamsonia gigas*, and *Anomozamites minor*. With his long training in the American forms, the author was able to detect features which had escaped previous notice, confirming his results as to the bisporangiate strobilus, the synangial microsporangia, the branching habit, etc. Of special interest are Williamsonia, which links up the Mesozoic with the modern cycadophytes, and Anomozamites, with its slender branching stem, small blade-like leaves, and small strobili, which is more suggestive of the dicotyledons than any known cycadophyte.—J. M. C.

Plant remains in Scottish peat bogs.—In continuing his studies of the Scottish peat bogs, LEWIS[38] has published the results of his investigations in the Scottish Highlands and in the Shetland Islands. Most interesting details are given in reference to the different zones, and the author summarizes the situation in the following statement: "All the Scottish peat mosses [bogs] show a definite succession of plant remains. The oldest, in the south of Scotland and the Shetland Islands, have an arctic plant bed at the base. This is succeeded by a forest of birch, hazel, and alder containing the temperate plants. A second arctic plant bed occurs above the 'lower forest,' and is overlaid in all districts (except the Hebrides and the Shetland Islands) by an 'upper forest' covered by several feet of peat bog plants."—J. M. C.

Blepharoplast and centrosome of Marchantia.—ESCOYEZ[39] has studied mitoses in the spermatogenous tissue of *Marchantia polymorpha* and *Fegatella*

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[36] FRASER, H. C. I., Contributions to the cytology of *Humaria rutilans*. Annals of Botany **22**:35–55. *pls. 4, 5.* 1908.

[37] WIELAND, G. R., Historic fossil cycads. Am. Jour. Sci. IV. **25**:93–101. 1908.

[38] LEWIS, FRANCIS J., The plant remains in the Scottish peat mosses. Part III. The Scottish Highlands and the Shetland Islands. Trans. Roy. Soc. Edinburgh **46**:33–70. *pls. 4.* 1907.

[39] ESCOYEZ, EUD., Blépharoplaste et centrosome dans le *Marchantia polymorpha*. La Cellule **24**:247–256. *pl. 1.* 1907.

conica. The results are different from those of IKENO in regard to the blepharoplast and centrosome. He finds no centrosome in the mitoses preceding the mother cell of the spermatid, and believes that his failure to find one is due to the absence of such a structure and not to any defect in technique. Two blepharoplasts were observed first in the mother cell of the spermatid near the plasma membrane, far from the nucleus. ESCOYEZ does not consider the blepharoplast to be a true centrosome; yet he has not traced its origin, and whether it comes from within the nucleus or from a certain region of the cytoplasm is not settled. —S. YAMANOUCHI.

Sorus of Dipteris.—Miss ARMOUR[40] has studied material of Dipteris that included the younger stages of the sporangium. *D. bifurcata* showed simultaneous development of sporangia in the sorus, and *D. conjugata* sporangia of different ages. The former, therefore, conforms to BOWER'S "Simplices," and the latter to his "Mixtae." The three species seem to make a series in the form of the leaf, with *D. bifurcata* as the most primitive, and *D. quinquefurcata* in an intermediate position; parallel with this is the division of sori, leading to increase in their number and decrease in the number of sporangia in a sorus; and finally there is the progression from the "Simplices" type to the "Mixtae" type. This series is thought to have progressed from such a type as Matonia.—J. M. C.

Morphology of Symplocarpus.—ROSENDAHL has investigated the embryo sac and embryo of Symplocarpus, and an abstract of his results has been published.[41] The primordia of the flowers appear eighteen to twenty months before anthesis, the ovules being "formed" in the season (autumn) preceding pollination. The proembryo is of the massive type characteristic of the aroids, in this case becoming ovoid in form. There is a short suspensor, and the stem tip is organized in a groove of the proembryo which develops near the suspensor. The endosperm encroaches upon both integuments and even into the chalazal tissue; and in turn the massive proembryo ("protocorm") destroys the endosperm, so that finally the embryo is freely exposed in the cavity of the ovary.—J. M. C.

Proteases.—VINES, in his fifth paper on this subject,[42] reports that oily seeds, those of hemp in particular, contain proteolytic enzymes which act vigorously without restraint from the oil present. He succeeded in isolating, for the first time from plant tissues, "a protease that is essentially peptic in its properties, digesting fibrin to albumose or peptone, but not acting on albumose or peptone, whether produced by its own digestion of fibrin or added as Witte-peptone. The facts justify the conclusion that the hemp seed contains two proteases, the one a

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[40] ARMOUR, HELEN M., On the sorus of Dipteris. New Phytologist **6**:238–244. *figs. 11–14.* 1907.

[41] ROSENDAHL, C. O., Embryo sac development and embryology of *Symplocarpus foetidus*. Science, N. S. **27**:209. 1908.

[42] VINES, S. H., The proteases of plants. V. Annals of Botany **22**:103–113. 1908.